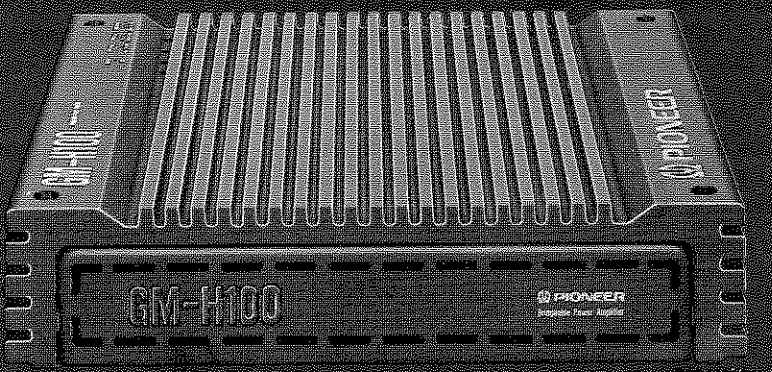
BRIDGEABLE POWER AMPLIFIER

AMPLIFICATEUR DE PUISSANCE PONTABLE

OWNER'S MANUAL
MODE D'EMPLOI

Thank you for purchasing this PIONEER product. Before attempting operation, be sure to read this manual.

Merci vous avoir procuré cet appareil PIONEER. Avant de l'utiliser, prenez le temps de lire ce mode d'emploi.



PIONEER

The Art of Entertainment

GM-H100
GM-H50

Important
The serial number of this amplifier is on the bottom. For your own security and convenience, write it down on the enclosed warranty card. Keep the card handy for future reference.

WARNING

Connection

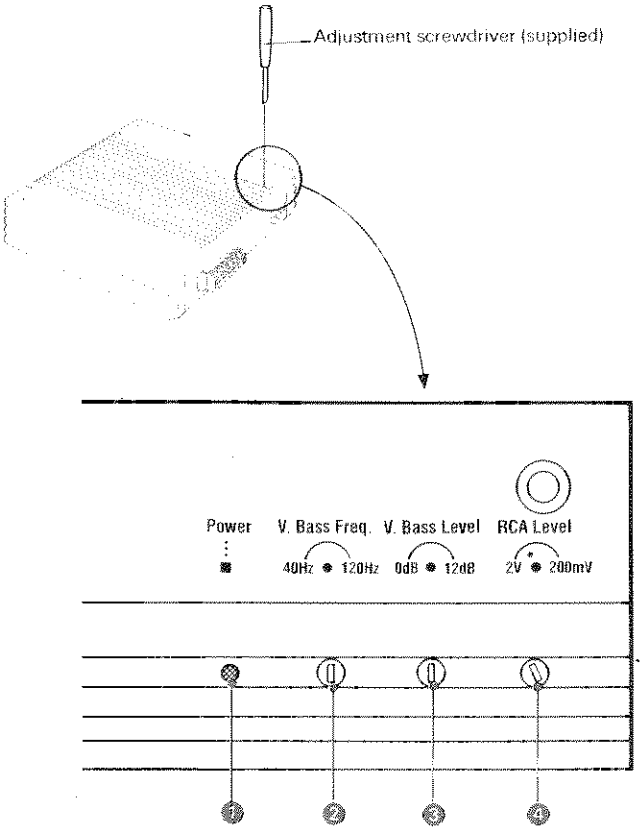
- Remove the negative lead of the battery, otherwise there may be a short circuit, or the lead may be damaged.
- Use the supplied battery lead, as other leads may cause a fire.
- If the fuse in the battery lead needs to be replaced, use a fuse with the same rating. Do not use a piece of wire instead of the fuse, as it may cause a fire.

Installation

- If the amplifier is installed in the passenger compartment, fix it securely, otherwise it may break free while the car is moving, and cause an injury or an accident.
- Do not install the amplifier anywhere that can get wet, otherwise it may give an electric shock if touched.

Use

- When the amplifier is in use, its temperature reaches 176 degrees Fahrenheit or higher. Do not touch it, otherwise you may be burned.



❶ Power Indicator

The power indicator lights when the power is switched on.

❷ Variable Bass Frequency Control

Adjusting the variable bass frequency control changes the boostable bass frequency of the amplifier. You can select a frequency in the range 40 to 120 Hz. Adjust the boostable bass frequency to suit the speakers or the music.

❸ Variable Bass Level Control

Adjusting the variable bass level control changes the level of the boostable bass frequency set by control ❷.

- If you do not want to boost the bass, turn the control fully counterclockwise to 0 dB.

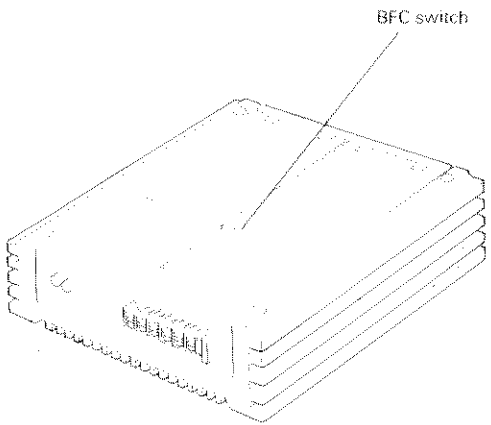
❹ RCA Input Level Control

If the output is low even when the volume of the car stereo is turned up, turn this control clockwise. If there is distortion when the volume of the car stereo is turned up, turn this control counterclockwise.

- Adjust controls ❷, ❸, and ❹ with the supplied adjustment screwdriver. Keep the screwdriver in case you need to readjust the controls later.
- No change in low-frequency sounds may be noticeable when the 40-to-120-Hz frequency level is adjusted if the program source does not contain components in the 40-to-120-Hz range or if small-diameter speakers are used.

BFC (Beat Frequency Control) switch

If beating is heard when listening to AM stations on your car radio, change the position of the BFC switch on the bottom of the amplifier with a small flat-bladed screwdriver.



Connecting the Units

Connect the components as shown in the diagram.

- Before finalizing installation, turn everything on, and make sure everything works correctly and that no noise is getting into the system.
- When routing leads and cords, secure them with cable retainers and electrician's adhesive tape. Also, to prevent any damage to the insulation on the leads and cords, protect them with electrician's adhesive tape wherever they may touch sharp edges.
- Keep all wiring away from hot surfaces or heater outlets to prevent short circuits.
- It is recommended that the speakers connected to the amplifier have the ratings shown below, or higher. If a speaker has a rating below that recommended, it may be damaged when the volume is turned up. The speaker impedance must be 2 to 8 ohms.

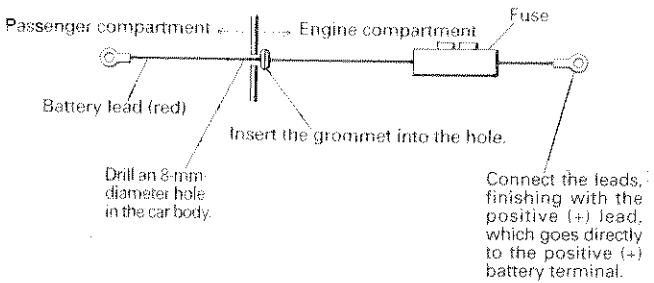
Mode		Speaker ratings	
		GM-H100	GM-H50
Two-channel	Maximum	100 W	50 W
	Nominal	50 W	25 W
One-channel	Maximum	320 W	160 W
	Nominal	160 W	80 W

In the case of a full-range speaker, use one whose maximum rating is higher than the maximum rating shown. In the case of a sub-woofer, use one whose nominal rating is higher than the nominal rating shown.

- Never connect a speaker lead to ground or to other speaker grounds. The protection circuitry will operate instantaneously, turning off the amplifier.
- To prevent noise problems, keep the power leads to the amplifier away from the signal cords (RCA cords) and speaker leads. Also, keep the power leads away from any antenna cords.
- Amplifier ground leads (black) should be connected to a solid metal part of the vehicle body. If using multiple amplifiers, connect all amplifier ground leads to the same point to prevent noise problems. To get good contact when grounding, you may have to sand away the paint to expose the metal underneath.
- To operate the amplifier and car stereo properly, connect the battery lead and the accessory power lead (red) correctly. If the leads are not connected correctly or are not connected at all, the amplifier and car stereo will not work.
- For detailed information on connections between different units and the amplifier, see the owner's manuals for the units, and follow their recommendations precisely.

Connecting the battery lead (red)

Route the battery lead (red) from the engine compartment to the passenger compartment to connect it to the amplifier. To prevent a short circuit, do not connect the positive (+) lead of the battery until the other leads have been connected.


Passenger compartment
Engine compartment
Fuse
Battery lead (red)
Insert the grommet into the hole.
Drill an 8-mm diameter hole in the car body.
Connect the leads, finishing with the positive (+) lead, which goes directly to the positive (+) battery terminal.

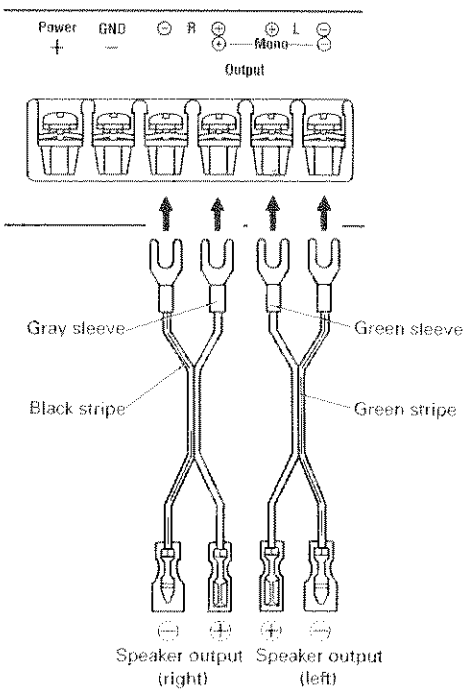
Connecting the leads (supplied)

Connecting the speaker leads

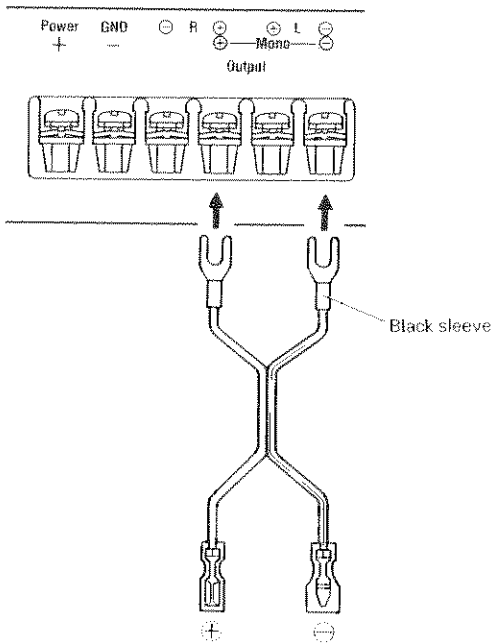
The speaker output mode can be two-channel (stereo), one-channel (mono), or three-channel (stereo + mono). Connect the speaker leads to suit the mode. To connect the speaker leads to the speaker terminals of the amplifier, see the connection diagram for each channel. Be careful with the polarity (+ and –), and with which channel is which (left [L] and right [R]).

- If the amplifier is used in three-channel mode, inductors and capacitors are needed. For more information, see "Three-channel mode (stereo + mono)".

Two-channel mode (stereo)



One-channel mode (mono)

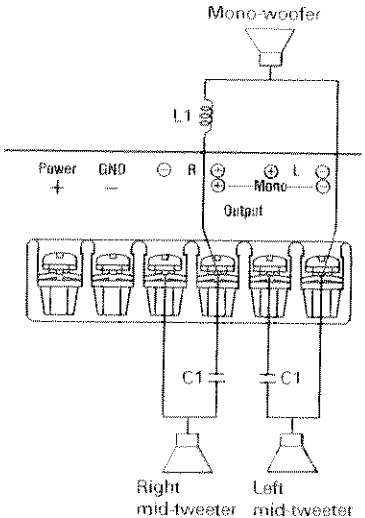


Three-channel mode (stereo + mono)

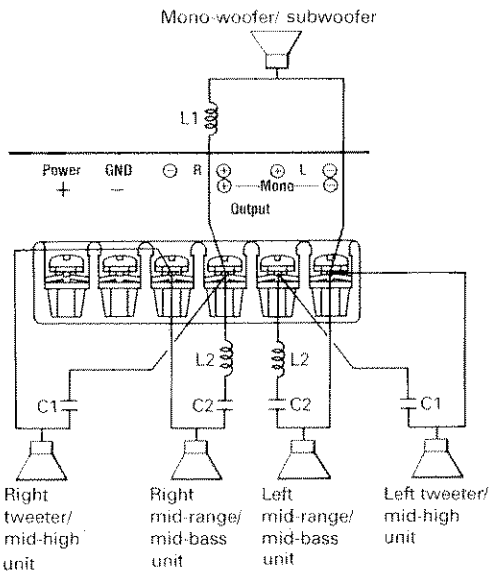
The power amplifier is basically a two-channel/one-channel bridgeable amplifier, but three channels can be catered for by combining the stereo and mono modes using inductors and capacitors. Some typical examples are given below.

- As making this connection does require a knowledge of electronics, get it done by your dealer or by someone specializing in such work.

Example 1 Three-channel, two-way system



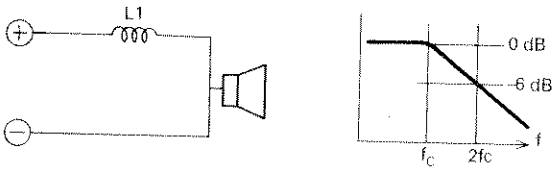
Example 2 Three-channel, three-way system



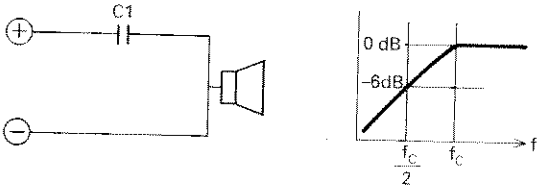
- The inductor (L1 or L2 in the diagram) acts as a low-pass filter. The capacitor (C1 or C2 in the diagram) acts as a high-pass filter. In three-channel mode, connect the inductor (L) to the woofer / subwoofer, and the capacitor (C) to the mid-tweeter / tweeter / mid-high unit.
  The filters (low-pass and high-pass) must be used in three-channel mode, otherwise the total load will be 2Ω or less, and the amplifier may fail, even if the speaker impedance is 4Ω.
- If the inductors and capacitors are connected to the speaker leads, secure or solder them so they cannot be pulled loose. Tape the joints to prevent short circuits.

Setting the filter constant

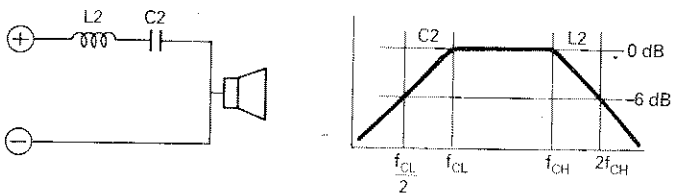
① **Low-pass filter (for subwoofer/woofer): 6 dB/octave**



② **High-pass filter (for mid-tweeter/mid-high-tweeter): 6 dB/octave**



③ **Band-pass filter (combination of low-pass filter and high-pass filter for mid-bass/mid): 6 dB/octave**



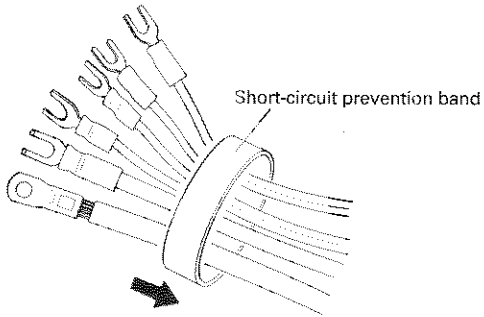
Component Guide

Speaker load impedance	2Ω		4Ω		8Ω	
fc (Hz)	L (mH)	C (μF)	L (mH)	C (μF)	L (mH)	C (μF)
50	6.4	1600	12.7	800	25.5	400
80	4.0	1000	8.0	500	16	250
125	2.5	560	5.1	300	10	160
200	1.6	400	3.2	200	6.4	100
320	1.0	250	2.0	125	4	62
500	0.64	160	1.3	80	2.6	40
800	0.4	100	0.8	50	1.6	25
1250	0.25	64	0.5	30	1.0	16
2000	0.16	40	0.3	20	0.64	10
3200	0.1	25	0.2	12.5	0.4	6.2
5000	0.06	16	0.13	8	0.26	4
8000	0.04	10	0.08	5	0.16	2.5
10000	0.03	8	0.06	4	0.13	2

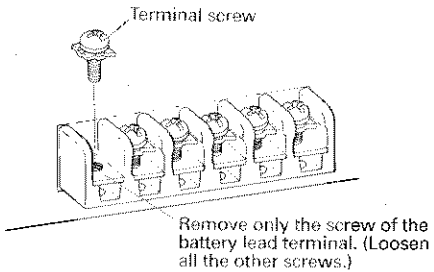
- A multi-channel system can be set up using a combination of filters ① , ② , and ③. The inductance (L) and capacitance (C) that determine the frequency (fc) applicable to the system should be chosen according to the above table .
- Use the capacitors specified. Non-polarized capacitors rated at over ±25V should be used for C1 and C2 in the diagram.

Connection procedure for speaker, battery, and ground leads

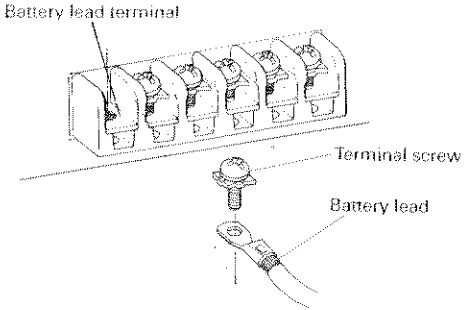
1. Pass the leads through the band for preventing short circuits.
   - This band *must* be used.



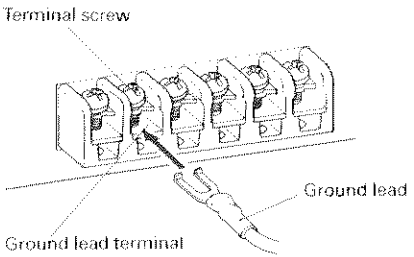
2. Loosen the screws of the terminals on the rear panel, and remove the screw of the battery lead terminal.



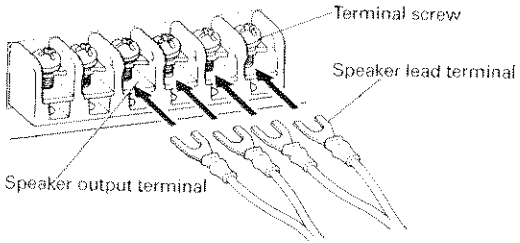
3. Connect the battery lead to the battery lead terminal, reinserting and tightening the screw.



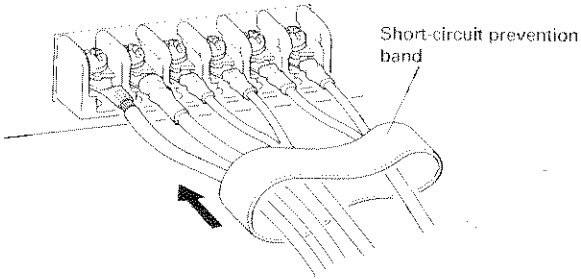
4. Connect the ground lead to the ground lead terminal, tightening the screw.

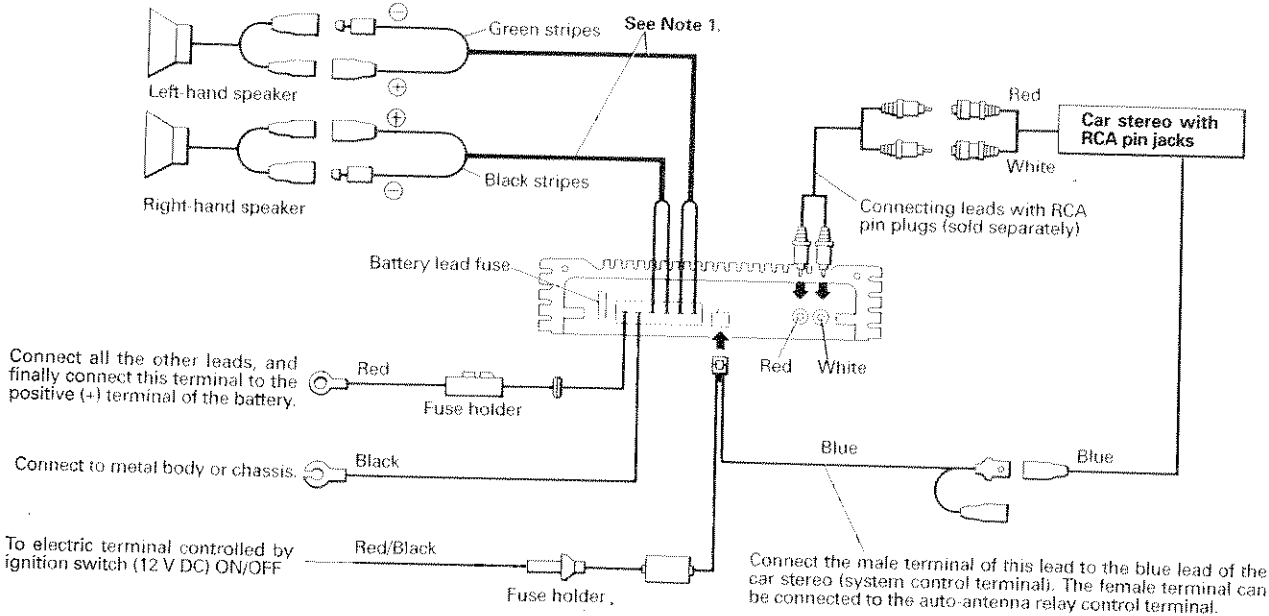


5. Arrange the speaker leads to suit the output mode to be used, connecting them to the speaker output terminals, and tightening the screws.



6. Slide the short-circuit prevention band over the terminals.

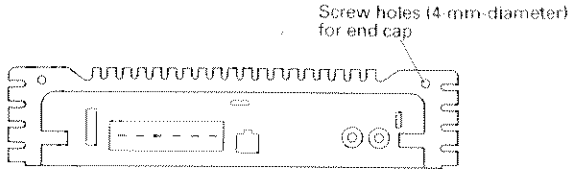



Green stripes
See Note 1.
Left-hand speaker
Right-hand speaker
Black stripes
Red
White
Car stereo with RCA pin jacks
Connecting leads with RCA pin plugs (sold separately)
Battery lead fuse
Red
White
Connect all the other leads, and finally connect this terminal to the positive (+) terminal of the battery.
Red
Fuse holder
Connect to metal body or chassis.
Black
Blue
Blue
To electric terminal controlled by ignition switch (12 V DC) ON/OFF
Red/Black
Fuse holder
Connect the male terminal of this lead to the blue lead of the car stereo (system control terminal). The female terminal can be connected to the auto-antenna relay control terminal.

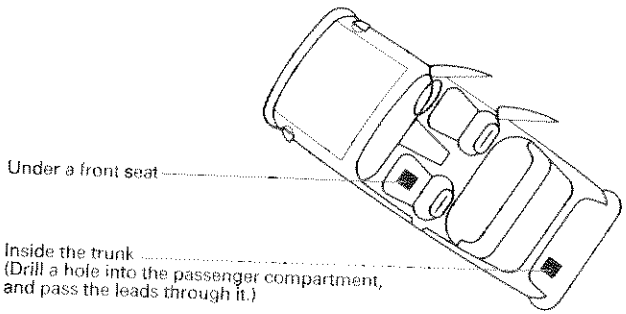
Note 1:
The speaker leads are connected differently depending on whether the output mode is three-channel, two-channel, or one-channel. For details, see page 7, 8 and 9. This connection diagram shows how to wire up the amplifier for two-channel mode.

Installation

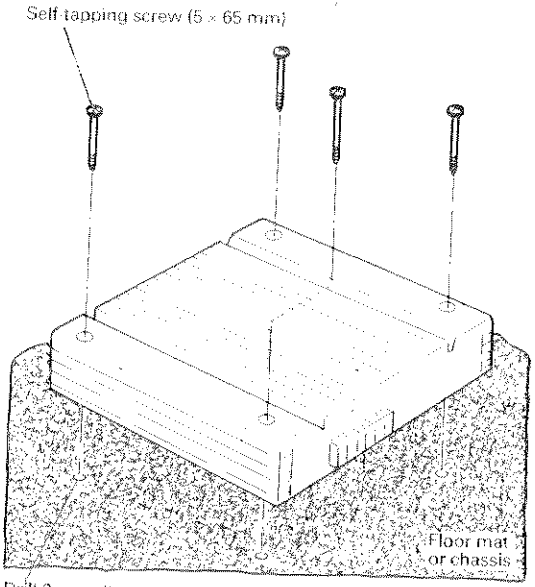
- Install the amplifier where it will not get in the way of driving, and will not be a danger to passengers during an emergency stop.
- If the amplifier is installed in the passenger compartment, fix it securely, otherwise it may break free while the car is moving, and cause an injury or an accident.
- Do not install the amplifier anywhere that can get wet, otherwise it may give an electric shock if touched.
- To prevent a short circuit, disconnect the negative battery lead before beginning installation. After installation has been completed and checked, reinstall any components that were moved or removed, then reconnect the lead to the negative battery terminal.
- Before drilling any mounting holes, check behind where you want to make the hole to make sure you do not drill into anything, such as the gas line, brake lines, electrical wiring, etc.
- If installed under a front seat, make sure the amplifier does not obstruct seat movement. Route all leads and cords carefully so the sliding seat mechanism does not pinch them and cause a short circuit.
- Do not install the amplifier under the carpet or a floor mat, as this will impede air circulation, causing the amplifier to overheat and possibly fail.
- Do not install the amplifier near the heater outlet, otherwise it may overheat and fail.
- Use only the parts supplied, and install the amplifier securely. If parts other than those supplied (specified) are used, they may come loose or cause damage to internal parts of the amplifier.
- Consult your dealer before making any holes in the car.
- If mounting the amplifier vertically, buy some 5-mm-diameter screws and nuts, and use them to secure the amplifier firmly, so that it cannot be dislodged by the vibration of the car.
- There are 4-mm-diameter screw holes on the right and left at the rear of the amplifier. These are used to fit an optional amplifier installation end cap. Do not use them for anything else.



Example of Installation Positions



1. Put the amplifier where it is to be installed, insert the supplied self-tapping screws (5 × 65 mm) into the screw holes, and push on them with a screwdriver so they make marks where the installation holes are to go.
2. Drill 3-mm-diameter holes at the points marked, and install the amplifier, either on the floor mat or directly on the chassis.



Care and Maintenance

- When replacing the fuse, replace it with one with the correct rating. If the correct fuse is not used, the amplifier may be damaged or there may be a fire.
- Do not use the amplifier at high volume for a long time with the engine stopped or idling. It may make the battery go flat, making it difficult to start your engine.
- The protection circuitry will operate instantaneously if a malfunction occurs, turning off the amplifier. If this happens, disconnect the power to the car stereo system, check the wiring for the cause of the problem, and, if found, correct it before using the stereo system again.
- Do not turn the volume up so high that you cannot hear police car, ambulance, or fire engine sirens.

In Case of Problems
If the amplifier will not operate properly, contact your dealer or nearest authorized Pioneer service station.

Specifications

Power source ..... 14.4 V DC (10.8 - 15.6 V allowable)
Grounding system ..... Negative type
Current consumption
(GM-H100) ..... 13 A (at continuous power, 4Ω)
(GM-H50) ..... 6.5 A (at continuous power, 4Ω)
Fuse
(GM-H100) ..... 30 A
(GM-H50) ..... 15 A
Dimensions
(GM-H100) ..... 264 (W) × 58 (H) × 260 (D) mm
[10 - 3/8 (W) × 2 - 1/4 (H) × 10 - 1/4 (D) in.]
(GM-H50) ..... 264 (W) × 52 (H) × 180 (D) mm
[10 - 3/8 (W) × 2 (H) × 7 - 1/8 (D) in.]
Weight
(GM-H100) ..... 4.3 kg (9.5 lbs.)(Leads for wiring not included)
(GM-H50) ..... 2.9 kg (6.4 lbs.)(Leads for wiring not included)
Maximum power output
(GM-H100) ..... 100 W × 2/320 W × 1 (EIAJ)
(GM-H50) ..... 50 W × 2/160 W × 1 (EIAJ)
Continuous power output
(GM-H100) ..... 50 W × 2/160 W × 1 (at 4Ω, 20 - 20,000 Hz, 0.05% THD)
80 W × 2 (at 2Ω, 20 - 20,000 Hz, 0.05% THD)
(GM-H50) ..... 25 W × 2/80 W × 1 (at 4Ω, 20 - 20,000 Hz, 0.05% THD)
40 W × 2 (at 2Ω, 20 - 20,000 Hz, 0.05% THD)
Load impedance ..... 4Ω (2 - 8Ω allowable)
Frequency response ..... 10 - 50,000 Hz (+0 dB, -1 dB)
Signal-to-noise ratio ..... 100 dB (IHF - A network)
Distortion
(GM-H100) ..... 0.003% (at 20 W, 1 kHz)
(GM-H50) ..... 0.003% (at 10 W, 1 kHz)
Separation ..... 65 dB (1 kHz)
Input level ..... 0.2 - 2 V /8 kΩ

These specifications were determined and are presented in accordance with specification standards established by the Ad Hoc Committee of Car Stereo Manufacturers.

Note:
Specifications and the design are subject to possible modification without notice due to improvements.

AVERTISSEMENT

Connexion

- Déposer le fil négatif de la batterie, sinon un court-circuit risque de se produire, ou bien le fil risque de s'endommager.
- Utiliser le fil de batterie fourni, car les autres fils risquent de causer un incendie.
- Si le fusible du fil de la batterie doit être remplacé, utiliser un fusible avec la même valeur nominale. Ne pas utiliser un fil au lieu d'un fusible, car il peut causer un incendie.

Installation

- Si l'amplificateur est installé dans le compartiment des passagers, le fixer fermement, sinon il risque de se détacher pendant que la voiture se déplace, et causer une blessure ou un accident.
- Ne pas installer l'amplificateur là où il peut être mouillé, sinon il risque de causer une secousse électrique s'il est touché.

Usage

- Quand l'amplificateur est en fonctionnement, sa température atteint 176 degrés ou davantage. Ne pas le toucher, sinon on risque de se brûler.

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